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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte SHASHISHEKARA SITHARAMARAO TALYA,
DANIEL JASON ERNO, OLAV ROMMETVEIT,
ELNAR MIKAL SUNDSVOLD, and MORTEN BJERKE

Appeal 2009-007565
Application 10/813,720
Technology Center 3700

Before JENNIFER D. BAHR, MICHAEL W. O'NEILL, and FRED A.
SILVERBERG, *Administrative Patent Judges*.

BAHR, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Shashishekara Sitharamarao Talya et al. (Appellants) appeal under 35 U.S.C. § 134 (2002) from the Examiner's decision rejecting claims 19-24 and 26 under 35 U.S.C. § 102(b) as being anticipated by Moody (US Pat. 1,776,392, issued Sep. 23, 1930) and rejecting claim 25 under 35 U.S.C. § 103(a) as being unpatentable over Moody and Troyer (EP 1 308 619 A1, published May 7, 2003)¹. The Examiner has indicated that claims 1, 3-17, 27, 29, and 30 (the only other claims pending in the application) are allowable. We have jurisdiction over this appeal under 35 U.S.C. § 6 (2002).

The Invention

Appellants' claimed invention is directed to a method for increasing the overall efficiency of a fluid impulse Pelton turbine. Spec., para. 1.

Claim 23, reproduced below, is illustrative of the claimed subject matter.

23. The method for configuring a Pelton turbine comprising:

disposing at least two needle valve injector assemblies between a distributor and a runner of the Pelton turbine to direct flow from the distributor to the runner; and

disposing at least two high efficiency injector assemblies between the distributor and the runner to direct a portion of overall flow of water from the distributor to the runner;

wherein the Pelton turbine comprises at least two needle valve injector assemblies alternately disposed with at least two high efficiency injector assemblies.

¹ We derive our understanding of the Troyer reference from the English language translation prepared by Schreiber Translations, Inc. contained in the electronic record of this application.

SUMMARY OF DECISION

We REVERSE and enter a NEW GROUND OF REJECTION of claims 23, 25, and 26 pursuant to our authority under 37 C.F.R. § 41.50(b) (2010).

ISSUES

The following issues are presented in this appeal:

1. What is the broadest reasonable construction of “high efficiency injector assemblies” consistent with Appellants’ Specification?
2. Do Moody’s nozzles satisfy the claim limitations of “at least two needle valve injector assemblies alternately disposed with at least two high efficiency injector assemblies”?
3. Do Troyer’s variable outlet jets (needle jets) 4 and fixed diameter jets 5 satisfy the claim limitations of “needle valve injector assemblies” and “high efficiency injector assemblies,” respectively? If so, does Troyer render obvious the subject matter of claims 23, 25, and 26? We address this issue in the new ground of rejection.

DISCUSSION

Issue 1- claim construction

Appellants and the Examiner both agree that Moody’s nozzles 33 are depicted and described as being identical to one another. Ans. 4; App. Br. 7, 9. The Examiner finds that alternating ones of Moody’s nozzles correspond to the “at least two needle valve injection assemblies” and the “at least two high efficiency injector assemblies,” respectively, called for in claims 19, 21, and 23. Fnl. Rej. 4. The Examiner defends this finding by pointing out that “[i]ndependent claims 19, 21, and 23 do not recite any structural

difference between the needle valve injector assemblies and the high efficiency injector assemblies” and that “[t]he term ‘high efficiency injector assembly’ is a relative term” which may be construed so broadly as to encompass any injector assembly that has a high efficiency in comparison to, for example, a “drop-by-drop” injection. Ans. 4-5.

Appellants, on the other hand, assert that the Examiner’s claim construction is in error because the different language (needle valve injector assemblies vs. high efficiency injector assemblies) used in the claims indicates that the high efficiency injector assemblies must be different from the needle valve injector assemblies, and because the present Specification clearly discloses that the terms have different meanings. App. Br. 8; Reply Br. 3-4. According to Appellants, the Examiner’s construction would entirely vitiate “the meaning of ‘alternately’ disposing the nozzles.” Reply Br. 3.

A determination of anticipation or obviousness begins with claim construction, followed by a comparison of the construed claim to the prior art. *Key Pharm. v. Hercon Labs. Corp.*, 161 F.3d 709, 714 (Fed. Cir. 1998). When claim terminology is construed in the United States Patent and Trademark Office, claims are to be given their broadest reasonable interpretation consistent with the specification, reading claim language in light of the specification as it would be interpreted by one of ordinary skill in the art. *In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004).

The Examiner is correct that the terminology “high efficiency” is terminology of degree. Thus, we consult Appellants’ Specification to determine whether it provides some standard for measuring that degree. *See*

Seattle Box Co., Inc. v. Indus. Crating & Pkg., Inc., 731 F.2d 818, 826 (Fed. Cir. 1984) (when a word of degree is used in a claim, it is necessary to determine whether the specification provides some standard for measuring that degree).

We find that Appellants' Specification does provide some standard for measuring the degree of "efficiency" required to satisfy "high efficiency." In particular, Appellants' Specification discloses that a high efficiency injector assembly is "intended to provide completely or substantially unimpeded flow of water . . . in a manner that produces a higher quality water jet." Spec., para. 20. Appellants' Specification further discloses that the high efficiency injector assembly, in a fully open condition of the spherical valve, has a "relative resistance to flow [that] is significantly reduced as compared to the needle valve injector assembly." Spec., para. 29. Further, Appellants' Specification emphasizes that while other valve configurations, such as gate valves, can be used for the high efficiency injector assembly, the high efficiency injector assembly "will provide an efficiency advantage over the needle valve injector assembly, such as by virtue of its open or relatively unimpeded flow path." Spec., para. 30.

Based on our findings above, we conclude that the Examiner's construction of "high efficiency injector assemblies" is unreasonably broad in light of Appellants' Specification. The broadest reasonable construction of "high efficiency injector assembly," consistent with Appellants' Specification, is an injector assembly which in its fully open condition provides a relatively unimpeded flow of water in comparison to a needle valve injector assembly.

Issue 2 – Moody’s nozzles

As acknowledged by the Examiner, all of Moody’s nozzles are described as being identical to one another. Ans. 4. Further, we find that Moody’s nozzles comprise needle valves. Moody, p. 3, l. 110 to p. 4, l. 36; fig. 9. As such, none of Moody’s nozzles are “high efficiency injector assemblies,” because none of them in its fully open condition provides a relatively unimpeded flow of water *in comparison to a needle valve injector assembly*. Consequently, Moody’s nozzles do not satisfy the claim limitations of “at least two needle valve injector assemblies alternately disposed with at least two high efficiency injector assemblies” so as to anticipate the subject matter of claims 19-24 and 26. We reverse the rejection of claims 19-24 and 26 as being anticipated by Moody.

In rejecting claim 25 as being unpatentable over Moody and Troyer, the Examiner merely relies on Troyer for a teaching to select the needle valve assembly based upon power requirements of the Pelton turbine and a range of flow between a distributor and runner, to optimize the efficiency and power of the turbine, and concludes it would have been obvious to select the injector assemblies of Moody based on such considerations. Fnl. Rej. 6. The Examiner does not propose a modification of Moody to replace any of the needle valve assemblies with high efficiency injector assemblies, much less articulate an apparent reason that would have led a person of ordinary skill in the art to do so. Thus, we reverse the rejection of claim 25 as being unpatentable over Moody and Troyer.

NEW GROUND OF REJECTION

Pursuant to our authority under 37 C.F.R. § 41.50(b), we enter the following new ground of rejection:

Claims 23-26 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Troyer.

Troyer describes configuring a Pelton turbine by disposing at least one needle valve injector assembly (variable outlet jet 4) between a distributor (not numbered) and a runner 1 of the Pelton turbine to direct flow from the distributor to the runner, and disposing at least two high efficiency injector assemblies (fixed diameter jets 5) between the distributor and the runner 1 to direct a portion of the overall flow of water from the distributor to the runner

1. Troyer, paras. 6, 11, 15, 17, 21; figs. 1, 2. Specifically, we find that Troyer's fixed diameter jets 5 satisfy the limitation of "high efficiency injector assemblies" because they provide a relatively unimpeded flow of water in comparison to a needle valve injector assembly. Moreover, Troyer describes the fixed diameter jets as being "designed in the efficiency optimum." Troyer, para. 11.

Troyer does not specifically describe an arrangement comprising "at least two needle valve injector assemblies alternately disposed with at least two high efficiency injector assemblies," as called for in claim 23. Troyer does depict an arrangement comprising three fixed diameter jets 5, which we find to be "high efficiency injector assemblies," and one variable outlet or needle jet 4. Troyer, fig. 2. Troyer further discloses that the depicted arrangement is merely illustrative, and that "it is possible that the multijet Pelton turbine can also have more than three fixed jets, or even fewer." Troyer, para. 21. Troyer also teaches providing at least one, but no more

than six, jets 4, 5, depending on power demand and water supply, with at least one (and thus, implicitly, more than one) of those jets being a variable outlet or needle jet. Troyer, paras. 6, 15.

The Supreme Court has stated:

When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense.

KSR Int'l Co. v. Teleflex Inc., 550 U.S. 398, 421 (2007).

A person of ordinary skill in the art would have immediately appreciated that there are a finite number of permutations with respect to the number and distribution of fixed diameter jets 5 and needle jets 4 contemplated within Troyer's teachings. One such arrangement would involve adding one more variable outlet or needle jet 4 in place of one of the three fixed diameter jets 5 in the embodiment depicted in figure 2 of Troyer. Such a simple modification would have been well within the technical grasp of a person of ordinary skill in the art. A person of ordinary skill in the art would further have appreciated that there are only two possible variations in the distribution of the two variable outlet or needle jets 4 and the two fixed diameter jets 5 about the runner, namely, either (1) variable, fixed, variable, fixed or (2) two adjacent variable followed by two adjacent fixed. Moreover, the results of varying the number and position of the fixed and variable jets would have been predictable to a person of ordinary skill in the art, given the teachings of Troyer. Specifically, a person of ordinary skill in the art would have understood that providing more variable outlet or needle jets 4 and fewer fixed diameter jets 5 would permit a greater range of

adjustability in overall flow rate, but with the additional cost of more complex valves which are more prone to breakdown. Troyer, para. 6.

In light of the above, modification of Troyer's arrangement to provide at least two needle valve injector assemblies (variable or needle jets 4) alternately disposed with at least two high efficiency injector assemblies (fixed diameter jets 5), as called for in claim 23, is likely the product not of innovation but of ordinary skill and common sense. Based on the facts before us, we conclude that the subject matter of claim 23 would have been obvious to a person of ordinary skill in the art in light of the teachings of Troyer.

The selection of the needle valve injector assemblies and high efficiency injector assemblies based upon power requirements of the turbine and a range of flow between the distributor and the runner, as called for in claim 25, would have been an obvious matter of common sense to a person of ordinary skill in the art², especially given the teachings of Troyer (*see, e.g.*, Troyer, para. 15, alluding to switching in and out individual jets depending on power demand and water supply). Thus, based on the facts before us, we conclude that the subject matter of claim 25 would have been obvious to a person of ordinary skill in the art in light of the teachings of Troyer.

Claim 26 calls for the two high efficiency injector assemblies to have identical sizes. Troyer does not explicitly disclose that the fixed diameter jets 5 have identical sizes. A person of ordinary skill in the art, however, would have immediately envisaged only two possibilities (i.e., identical or

² "A person of ordinary skill is also a person of ordinary creativity, not an automaton." *KSR*, 550 U.S. at 421.

not identical) for the relative sizes of the fixed diameter jets of Troyer. Thus, the selection of either would have been obvious to a person of ordinary skill in the art. Moreover, the selection of fixed diameter jets of identical size would offer the self-evident advantage of interchangeability. Thus, based on the facts before us, we conclude that the subject matter of claim 26 would have been obvious to a person of ordinary skill in the art in light of the teachings of Troyer.

DECISION

The Examiner's decision is reversed. We enter a new rejection of claims 23, 25, and 26 pursuant to 37 C.F.R. § 41.50(b).

FINALITY OF DECISION

This decision contains a new ground of rejection pursuant to 37 C.F.R. § 41.50(b). 37 C.F.R. § 41.50(b) provides "[a] new ground of rejection pursuant to this paragraph shall not be considered final for judicial review."

37 C.F.R. § 41.50(b) also provides that Appellants, WITHIN TWO MONTHS FROM THE DATE OF THE DECISION, must exercise one of the following two options with respect to the new ground of rejection to avoid termination of the appeal as to the rejected claims:

(1) *Reopen prosecution*. Submit an appropriate amendment of the claims so rejected or new evidence relating to the claims so rejected, or both, and have the matter reconsidered by the examiner, in which event the proceeding will be remanded to the examiner. . . .

(2) *Request rehearing*. Request that the proceeding be reheard under § 41.52 by the Board upon the same record. . . .

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 1.136(a)(1)(iv) (2007).

REVERSED; 37 C.F.R. § 41.50(b)

hh

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